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27 March 2020

Version of attached file:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Bouncken, Ricarda and Ratzmann, Martin and Barwinski, Roman and Kraus, Sascha (2020) 'Coworking spaces : empowerment for entrepreneurship and innovation in the digital and sharing economy.', Journal of business research., 114 . pp. 102-110.

Further information on publisher's website:

https://doi.org/10.1016/j.jbusres.2020.03.033

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Coworking Spaces: Empowerment for Entrepreneurship and Innovation in the Digital and Sharing Economy

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Abstract

Freelancers, entrepreneurs, new ventures, but also incumbent firms increasingly use coworking spaces (CWS). The alignment of work-space and social space can facilitate organizational empowerment supporting individual work satisfaction. Our mixed-methods study of 363 respondents from CWS in 26 cities in the USA, Germany, and China identifies configurations of institutional patterns on work satisfaction associated with a sense of community, autonomy, participation, linkage multiplicity and mutual knowledge creation. High work satisfaction can occur in three different configurations related to a) agility housing, b) knowledge housing, and c) social housing. Our findings contribute to how incumbent firms and CWS can influence work satisfaction and empower towards innovation and entrepreneurial performance.

Keywords: Coworking spaces, Empowerment, Innovation, Entrepreneurial performance, FsQCA, NCA, Mixed methods

1. Introduction

Freelancers, entrepreneurs, new ventures, but also employees of incumbent firms increasingly use *coworking spaces* (CWS) which offer an office work-space combined with a social space (Bilandzic & Foth, 2013). Through this alignment, CWS can facilitate joint work, creativity, knowledge exchanges, work satisfaction and ultimately lead to increasing innovation and entrepreneurship (Bouncken et al., 2016a; Capdevila, 2014; Moriset, 2014; Spinuzzi, 2012). Besides the potential of CWS to create a *sense of community* (SoC) (Spreitzer et al., 2015; Garrett et al., 2017), the mechanisms through which these institutions create advantages are mostly unclear yet.

CWS form a relatively novel institution in which the social and tangible context imprints thinking, behavior, and outcomes of users (Greenwood et al., 2010; Toubiana, 2019). Institutionalizations develop in the context of social interaction as well as of spatial and organizational settings of the provider. While operating in the CWS, users influence other users. They develop and manifest specific patterns through institutionalizations (Lok, 2010; Lok & Willmott, 2018). Institutional patterns influence what providers and users consider as appropriate action within the spatial institution of a CWS. However, patterns might not necessarily have only positive effects on users, e.g. on their work satisfaction (Toubiana, 2019), but also negative ones.

Hence, the purpose of this article is to analyze institutional patterns in CWS and how their configurations relate to work satisfaction. We, therefore, chose a two-step mixed-methods analysis (Kallmuenzer et al., 2019; Woodside, 2014). In the first step, we conduct a qualitative study with 9 users and 5 providers to generate an understanding of important characteristics for work satisfaction in CWS. The results from our interviews guide and enrich our theoretic development based on the institutional theory. After the identification of characteristics, we derive configurations towards high or low work satisfaction based on quantitative survey data from 363 users in 57 CWS by using a necessary condition analysis (NCA) (Dul, 2016) and a fuzzy-set qualitative comparative analysis (fsQCA) (Ragin, 2008).

We identify institutional patterns in CWS related to SoC, participation, autonomy, linkage multiplicity, and mutual knowledge creation with individual work satisfaction as the outcome variable. Patterns, especially of participation, autonomy, linkage multiplicity correspond to the organizational empowerment concept of hierarchical organizations (Matthews, 2003). These

patterns show the importance of empowerment in and through contemporary work-spaces expedited in the digitalizing economy. Configurations shown by the NCA and fsQCA analysis relate to high individual work satisfaction (three) vs. low satisfaction (four). Higher work satisfaction occurs in configurations that can be characterized by a) agility housing, b) knowledge housing, or c) social housing.

Our research has theory and phenomenon implications. We contribute to institutional theory with respect to emerging patterns and their configurations in a non-hierarchical spatial work setting (DiMaggio & Powell, 1983; Greenwood et al., 2010). More broadly put, our results bring understanding to localized patterns and their configurations that facilitate organizational (Matthews, 2003) and psychological empowerment (Spreitzer, 1995) that advance work satisfaction and thereby potentially also innovation and entrepreneurship. Likewise, our findings on CWS inform empowerment, innovativeness, and entrepreneurship by a phenomenon (CWS) of the modern sharing-economy and digitalized world (Bouncken & Reuschl, 2018).

2. Theoretical background

2.1. Phenomenon: CWS

The open offices of the IT firms, such as especially those in the Silicon Valley, but also the smooth social interaction in public libraries inspired the establishment of the CWS concept (Bilandzic & Foth, 2013; Schopfel et al., 2015). Generally, CWS offer an interior to support informal social interaction greater than traditional office concepts (Fuzi, 2016; Schopfel et al., 2015). At the core, CWS provide infrastructure and dedicated space to facilitate professional and social interaction that enables knowledge exchange, creativity, and innovation processes (Bouncken & Kraus, 2016; Gandini, 2015; Reuschl & Bouncken, 2017; Gerdenitsch et al., 2016; Spinuzzi, 2012). Especially the common social spaces of cafeterias, lounges, and bars of CWS expedite serendipitous networking, knowledge exchange, collaboration, innovation as well as individual work satisfaction (Gandini, 2015; Reuschl & Bouncken, 2017). Not surprisingly, CWS differ one to the other. Some CWS have more space dedicated to common, joint and open offices, while others rather concentrate on single offices, event space, or community areas.

CWS can follow multiple purposes, they can aim towards attracting start-ups and new ventures and thus share characteristics with incubators. Other CWS have a focus on open offices for company employees to allow more personal interaction while also reducing costs compared to single and dedicated company offices. Owners of CWS might be specialized coworking-providers or public institutions, but also incumbents. Most CWS are set up at attractive locations within major cities, but increasingly CWS exist in more rural areas catering to rural entrepreneurs (Fuzi, 2016). The high diversity in CWS regarding strategy, location and set-up challenges current research seeking to identify global success factors of CWS.

2.2. Theoretic approach: Institutionalization of CWS

Institutional theory broadly defines an institution as a set of rules that govern the behavior of actors (Selznick, 1996). The multiple schools of institutional theory (Mahoney & Thelen, 2010) cover institutional arrangements that range from legal-formal institutions (e.g. political or history institutional theory) to cognitive constructions and patterns (e.g. social constructive institutionalism). Especially sociological institutionalism concentrates on shared informal and tacit conventions that regulate the behavior of humans (Schmidt, 2008). Institutions require at least a partially shared understanding of individuals. Institutional organization theory explains why institutions emerge and spread occurring as somewhat similar institutions (DiMaggio & Powell, 1983). The attractiveness of institutional models is affected by institutional patterns and socialization processes which inform routines and taken-for-granted institutionalized practices (DiMaggio & Powell, 1983).

CWS are about the alignment of social interaction and work allowing multiple, flexible, and autonomous knowledge exchanges between users who might work alone but also in teams temporarily or long-term (Bilandzic & Foth, 2013; Capdevila, 2014; Spinuzzi et al., 2019; Garrett et al., 2017; Gerdenitsch et al., 2016). The interior of CWS should allow office work, but also promote openness to social interaction, participation in the work-spaces, and its teams, using knowledge in and from different contexts and engaging in a mutual creation of knowledge. Institutional patterns emerge by formal and informal organization of the space and behavior of the users. Over time behaviors become shared and institutionalized and thus will channel behavior in CWS.

3. Modeling the main institutional patterns in coworking spaces

In the first step of our analysis, we followed a qualitative interpretivist approach and aimed to develop an understanding of the CWS phenomenon by appreciating its uniqueness and its interaction within the context. We aimed to generate deep insights and connect these insights to theory (Dyer Jr & Wilkins, 1991). Following Stake (1995), we concentrated on understanding subjective meanings in the social world, here CWS, inquiring how individuals acknowledge the existence of these meanings, and how they understand them. We explore the CWS characteristics of individual work satisfaction and combine insights with current literature. We apply empirical data from open qualitative interviews, carried out in four CWS, with five CWS providers and nine users in 3 cities within Germany (Table 1). The mixture of corporate and open CWS were selected as information-rich sites that enable in-depth understanding of context and characteristics. We interviewed providers as well as users to study work satisfaction from multiple perspectives. The interviews bring an in-depth understanding of relevant characteristics in CWS. We asked users which aspects of the CWS had the biggest impact on their work satisfaction. We asked the providers what characteristics they believe were relevant for improving their user's work satisfaction. We conducted the interviews in six months, and each lasted between 25 and 55 minutes. In the analysis, five relevant characteristics emerged which were mentioned by the 14 interviewees.

Insert Table 1

3.1. Sense of community logic

CWS have the potential to bring about a SoC (Butcher, 2013; Garrett et al., 2017; Spinuzzi et al., 2019). The SoC emerges within a specific tangible environment, specifically the interior of the CWS, its location (e.g. a quarter of a city; Durante & Turvani, 2018), the rules set by the CWS provider, the personnel and the moral sets of the CWS, the user base of the CWS and their social interaction. For example, a specific local-regional community in which the space is located will go along with certain logics (Lee & Lounsbury, 2015).

SoC was mentioned in every interview as relevant for work satisfaction. Some coworkers expressed that SoC is of especially high relevance. Interviewed B2 told us: *"Working alone at home or always working from home with two people is of course also stressful in the long run- that's why we were happy to find a CWS where we also get in contact with other people."* Contrary to this positive approach to SoC, CWS provider D1 informed us that they had a productivity focus that did not support SoC: *"We want people to be able to work together cleanly and very focused and professionally and that's all, and that's exactly what's important, so our approach is reduced to just this aspect".*

The location and the size of the space might influence the development of the SoC. CWS might connect to but also depart from the values and ideals of the local community. Yet, the SoC might not sufficiently describe the specifics of CWS that might trigger performance and work satisfaction of CWS users. The CWS provider will have set rules in the specific tangible and service environment of the space which also influence the behavior of users. Coworking is directed at fluid and porous structures where users can move quickly and easily across team boundaries and use their tacit and explicit knowledge seamlessly in and outside of teams (Dibble & Gibson, 2017). This relates to the other key characteristics of openness and autonomy, easy participation, linkage multiplicity, and mutual knowledge exchange.

3.2. Linkage multiplicity

The open architecture of CWS allows to easily enter social exchanges (Garrett et al., 2017). The architecture and open social atmosphere might allow users to team up using multiple linkages. The presence of individual and team-based work in CWS permits work in several overlapping teams parallel or sequentially. Becoming part of teams, changing between teams, and the fluidity of loose boundaries might allow pursuing own ideas, using own skills, and to step into various multi-person shared knowledge creation processes.

Linkage multiplicity is one of two characteristics that were mentioned in every interview as highly relevant for work satisfaction. Interviewee D2 described the importance of multiple linkages in the following statement: "*We always work with different people. These co-operations also happen on a contractual basis. We give each other suggestions, help each other, work for projects with another team, but remain independent and responsible*.". From the provider perspective, B1

gave us the following information on the importance of linkages: *"Users take advantage of this proximity (in the CWS) to talk about their business model with other coworkers, give each other tips or enter into co-operations. We are quite diversified here. We have IT-people, company founders, management consultants, designers, web designers, all in one CWS".*

Moving between teams allows contributing to diverse knowledge exchanges while applying own knowledge and absorbing complementary knowledge. Using the own knowledge better and having easier access to complementary knowledge might increase work satisfaction. The degree to which individuals can use their skills and knowledge while pursuing own ideas will relate to high work satisfaction. Still, the instability of team relationships and the high risks of losing key ideas or sharing proprietary knowledge might bring high tensions that reduce work satisfaction. Being involved in shared and mutual knowledge creation processes might reduce those tensions because of the recursive knowledge creation. The SoC, thus the belonging, and participating in the space also might compensate the tensions of diverse and fluid ties within and across teams.

3.3. Openness and autonomy

Traditional firms build hierarchies and functional differentiation (e.g. managers vs. floor personnel, marketing vs. engineering) and impose further homogenizing forces by formal and informal factors (e. g. organizational rules, informal networks, collaboration in joint projects). CWS are set up to break with these rigid structures in order to facilitate interaction dynamics of users in CWS that differ from traditional work contexts.

Our qualitative interviews indicate that most coworkers have freedom and autonomy on their performance metrics and work structure as they are either freelancers or entrepreneurs. Interestingly we find that by incumbent employed CWS users also have high autonomy in structuring their work. Interviewee C1 who works in a corporate CWS told us the following: *"There are corporate goals. The individual goals of the divisions are oriented towards these. The result is the only important factor. How I get there doesn't matter. I don't get any guidelines".*

The 'typical' form of CWS by dedicated coworking-providers offers high openness to membership and users' termination of their membership and with high degrees of autonomy of users (mentioned also by all open CWS providers). This openness to outsiders might not exist for CWS that are created by incumbent firms to provide a new space for work of company employees

(mentioned by C1). Yet, even those incumbent spaces might open barriers to allow an easy integration in the space which avoids the organization's hierarchy systems. Instead, users have autonomy in working individually, in teams, and engage in permanent or fluid relationships. They might choose their own goals instead of goals set by authorities. Users might structure tasks on their own priorities and competencies. Performance will be less monitored by others or superiors. The autonomy might improve empowerment and work satisfaction (Zangaro & Soeken, 2007). Yet there are also challenges because the autonomy might overburden users. Social interactions, joint values, etc. might help to cope with the greater levels of autonomy in the space.

3.4. Participation

Generally, CWS have open social spaces that facilitate social interaction of users. They might bring opportunities to meet and to identify areas for joint projects or tasks. Yet, CWS will vary according to the easiness at which new users feel "at home" and can access social relationships. Even if users feel welcome and at ease, they might not participate in a closer social interaction and knowledge exchange. In our interviews, users referred to the ease of participation when first joining a CWS. For example, Interviewee D3 told us this story about joining a CWS for the first time: "*I was looking for connection and at some point, I just came to the CWS and then it was on the first day that one of the coworkers asked me if I wanted to go out and play frisbee. From that moment on I was in and I got to know so many people, who have helped me personally and professionally. I gained a very important network."* Interviewee C3, who is working in a corporate CWS made the following statement specifying the importance of easy exchange and participation on his well-being: *"Through the participative exchange with colleagues, I am more motivated and more satisfied".*

These examples indicate one of the core principles of CWS – open participation leading to community, motivation, empowerment (Spreitzer, 1995) and satisfaction. CWS users might work individually and isolated in CWS if they choose to; yet, this is not the guiding idea of the term "co". Hence, CWS need patterns in which the not formally integrated users become involved in the social and work environment of the space.

Feeling easily at home, participating in social and in knowledge exchange might relate to a greater participational level in a CWS. Greater participation might improve work satisfaction, but

it might also overstretch the social needs and obligations of users. Potentially other social factors, joint values, the SoC and the simpleness to enter but also leave groups again might form specific patterns that improve individual work satisfaction.

3.5. Mutual knowledge creation

CWS offer the opportunity for individuals to transfer, acquire, and assimilate knowledge of explicit and implicit components (Bouncken & Aslam, 2019). Compared to acting alone, the exchange of knowledge among CWS users allows greater synergies, and thus also less complicated, and more effective work. The social and architectural context, especially of open interior of work and social spaces facilitates open and autonomous interaction among CWS users for knowledge exchange and learning (Bouncken et al., 2020; Parrino, 2013). Actors might start with some informal confabulation, then extend this to exchange of information, helping, working for each other and then potentially even moving into joint work-, team-, project-, and firm-relationships in which they exchange knowledge.

Our qualitative interviews showed the opportunity to mutually work on solutions and ideas in CWS which might turn into concrete projects. Interviewee D3 reported that he has encountered this situation multiple times. He described the current situation in the CWS as follows: *"With the colleagues that are active in a similar business field I openly discuss what I am doing and they also tell it and then we ask briefly how do you do that, or how do you think about it, or can you take a look at this? So we share experiences and find solutions."*

The knowledge exchange allows finding various solutions for coping better and faster with challenges and problems. Projects and tasks take advantage from a more easy access of diverse knowledge in the space. Individuals might experience the exchanges of knowledge and learning as demanding and even stressful, but the better and faster solution of problems, challenges, tasks, and projects might increase individuals' satisfaction in the workplace. Yet, knowledge exchange does not necessarily lead to improvements (Bouncken & Kraus, 2016), and might need other supporting factors. Learning is not independent from its social environment, especially the interaction within or across groups across individuals in the same social group (Bouncken et al., 2016a). Thus, there are variations of how mutual knowledge exchange relates to other patterns and individual work satisfaction. Different levels of shared SoC in the space and degrees of freedom openness to new

members in the space or teams will influence the level of mutual knowledge exchange and the merits on work satisfaction.

3.6. Empowerment

Empowerment refers to organizations facilitating their employees' discretion and autonomy in performing their tasks and functions (Spreitzer, 1995; Zhang & Begley, 2011). Matthews (2003) describes organizational empowerment based on employees' control of workplace decisions, dynamic structural framework, and the fluidity in information sharing and significant differences by the number of included dimensions. From this perspective, it is more interesting to identify patterns as single characteristics and their consequences on individual work satisfaction.

4. Method

4.1. Sample

In a subsequent analysis step, a team of research assistants visited CWS in three different countries to collect data using a standardized questionnaire. The respondents completed the questionnaires in the presence of the research assistants who could clarify ambiguities. The questionnaire also gathered general information about the CWS (name of the CWS, city, country), personal information about the respondent (age, gender, profession, and experience in CWS). The remainder of the questionnaire was about the characteristics of the CWS. All in all, we collected questionnaires from 363 users in 57 CWS operating in 26 cities in the USA, Germany, and China. After omitting all questionnaires with missing values in relevant variables, our final sample consists of 328 observations. Most participants come from China (77.7%) and Germany (21.6%). About half (46.9%) of the participants are entrepreneurs, two-thirds (63.7%) are males, and the average age is 27.7 years (SD=6.3). Most participants work in teams (78.7%) with an average of 9 core-team members, and for a time of 16.4 months so far.

4.2. Measures

Our study employed a multi-item approach (Nunnally & Bernstein, 1994) on 5-point Likert scales. We carried out a principal component analysis by non-linear iterative partial least squares

(NIPALS) algorithm of Wold (Noonan & Wold, 1977). Our outcome measure of individual work satisfaction reflects the work-related attitude (Diestel et al., 2014) on the fit between job requirements and individual talents and skills (Wang et al., 2010), the degree of agreement between the work and the ideal, and satisfaction about the working conditions (Guerra & Patuelli, 2014). The items are listed in Table 2. *Participation* defines how easily new members can join and integrate into the existing community of a CWS (Colignon, 1987). *Autonomy* refers to members' degree of involvement in making decisions about their work (Ducharme & Martin, 2000), defining their own goals, work structures, and performance metrics (Rico et al., 2007; Hackman & Oldham, 1976). *Linkage multiplicity* explains members' freedom to work individually or in more than one team consisting of the members of their choice (Colignon, 1987; Workman, 2005). *SoC* refers to users' perception to be part of the community, having the opportunity to overcome social isolation and develop friendships with other members (Garrett et al., 2017). For *mutual knowledge creation*, we adapted an existing scale for learning among individuals/members (Bouncken et al., 2016b).

To evaluate the reliability and internal consistency of our items, we apply item-to-component correlations and Cronbach's-Alpha (CR). The correlations between items and their accompanying components range from 0.78 to 0.90. The CR-values range from acceptable (linkage multiplicity, sense of community, and mutual knowledge creation) to very good (participation, autonomy, work satisfaction). Furthermore, we evaluate the average of the mono-trait correlations (which reflect the correlations of indicators within the same construct) and the hetero-trait correlations (which reflect the correlations of indicators across constructs measuring different phenomena) to support discriminant validity by the heterotrait-monotrait ratio (HTMT) with values lesser than 0.85 (Henseler et al., 2015).

Insert Table 2

Table 3 shows the correlations. The highest correlations are shown for linkage multiplicity with participation, linkage multiplicity with autonomy, SoC with participation, and autonomy with participation.

Insert Table 3

4.3. Procedures

For our analyses, we apply three different approaches: First, in fsQCA, we perform a necessity analysis of participation, autonomy, linkage multiplicity, SoC, and mutual knowledge creation with individual work satisfaction as the outcome variable. We identify which necessary causes allow the outcome to exist. Without the necessary causes, the outcome will not exist. Second, we continue with a necessary condition analysis (NCA) to calculate effect sizes of the characteristics on the outcome (Dul, 2016). A major difference between QCA and NCA is that NCA focuses on necessary determinants that are not automatically sufficient. QCA can focus on sufficient causes that are not automatically necessary (Kraus et al., 2018b). A sufficient cause ensures the outcome existence (Dul, 2016). Third, to identify sufficient patterns of work satisfaction, we apply fsQCA to explore sufficient core and peripheral elements in relation to the outcome.

In all analyses[1], we use membership scores representing the extent to which a case is a member of a set. For the transformation of raw scores to membership scores, we use direct fuzzy-set calibration (Ragin, 2008a, 2008c). The anchor values of full membership are based on the 0.95 percentile. The crossover point of maximum ambiguity is based on the median and the full non-membership is based on the 0.05 percentile (Ragin & Fiss, 2008). After calibrating the fuzzy sets, we calculate the degree of membership of each case in each of the logically possible combinations and the distribution of cases across these combinations. To avoid that cases with a precise membership value of 0.5 dropped from the fuzzy set analysis, we added a constant of 0. 00001 to all conditions (Fiss, 2011).

[1] Aditionally, in the NCA we compare the results of effect sizes calculated by the sum of raw scores with the calibrated scores.

4.4. FsQCA necessity analysis

To check for necessity before sufficiency, we assess whether the five patterns meet the necessary condition for the outcome variable. According to Schmitt et al. (2017), a consistency cut-off value of 0.80 specifies identifying necessary conditions. The consistency score of 0.80 would indicate that in most – but not all – cases, membership in mutual knowledge creation comes with membership in individual work satisfaction (Table 4). With consistency scores of less than 0.75 indicating substantial inconsistency for participation and SoC with work satisfaction.

Insert Table 4

4.5. Necessary condition analysis

We use a multivariate necessary condition analysis (NCA) approach for finding necessary ingredients of individual work satisfaction in CWS. Multidimensional ceiling combines the two-dimensional ceiling lines of the separate conditions. If necessary conditions are correlated, multivariate NCA will identify each as necessary, although correlated necessary conditions may have the same underlying meaning (Dul, 2016). The effect size can be compared with "relevance" (Goertz, 2006), and "coverage" (Ragin, 2006; 2008b) for the importance of a necessary condition. We use continuous linear ceiling regression techniques with free disposal hull (CR-FDH). We find significant but very small effect sizes for participation, sense of community, and autonomy. The effect sizes are marginal higher when calculated with raw data, but the level of significance is equal (Table 5).

Insert Table 5

Estimated with raw data, none of the characteristics are required to reach 50 percent of the observed work satisfaction. For a higher level of satisfaction (70%) a minimum value of participation and sense of community are required for work satisfaction to occur. For highest work satisfaction (100%), all five characteristics are required on a minimal level. With calibrated data, for a 60 percent-probability of membership in work satisfaction a minimal value of participation is necessary. For 70 percent-probability of membership in work satisfaction minimal values of participation and sense of community are necessary. To reach a 100 percent-probability of membership in work satisfaction, minimal values of all five characteristics are necessary.

4.6. Patterns of sufficient core- and peripheral configurations

The previous analysis focused on the necessity of participation, autonomy, linkage multiplicity, SoC, and mutual knowledge creation for work satisfaction. In the next step, we present sufficient configurations of these causes. The theoretical truth table refers to 32 possible logical combinations (2^k) of these causal conditions (k=5). For identifying generic patterns, we choose a relatively high frequency cut-off value of eight cases. The 18 most common combinations of conditions that pass this restriction retain 80 percent of cases.

We apply consistency and coverage metrics to assess the necessity and sufficiency analyses (Ragin, 2008b). Consistency measures relate to the degree to which cases having the specified effect also exhibit causal or constructive characteristics. In other words, it measures the proportion of members of the subset who are members of the superset. Consistency is to set relationship what the p-value is for statistical inference. The higher the consistency, the stronger the set relationship. In general, we look for set-theoretical relationships with consistencies greater than 0.88. Coverage measures how much a consistent subset "covers" the superset. In the case of "necessary" causes, coverage can be interpreted as the degree to which the cause "is relevant" to the effect (Ragin, 2008b). With the fsQCA approach, theoretically, a condition (A) is necessary for an outcome (Y) if in each case the degree of membership in the outcome is consistently less than or equal to the degree of membership in A (Y≤A). Condition A is sufficient to Y if across all cases the degree of membership in condition A is consistently less than or equal to the degree of membership in Y (A≤Y; Wind, 2017).

The results of the set-theoretic consistency assessments for the eighteen combinations meet the frequency threshold (a frequency of at least eight cases that are more in than out of each combination). The consistency scores range from 0.199 to 0.887, indicating a substantial spread in the degree to which the subset relation is satisfied. The maximizing of parsimony in the truth table result in three configurations for membership in work satisfaction and four configurations for non-membership in work satisfaction.

Individual work satisfaction can be caused by 1) SoC in the absence of participation, 2) participation with linkage multiplicity, or 3) in absence of autonomy with linkage multiplicity and mutual knowledge creation. The absence of participation, autonomy, linkage multiplicity, or mutual knowledge creation can be sufficient causes of negated work satisfaction. Additionally, the intermediate solution offers these core configurations in patterns complemented by peripheral conditions (Table 6).

Insert Table 6

The first configuration from the parsimonious solution is included in an intermediate solution which is complemented by mutual knowledge creation (P3 in Table 7). It indicates a more social-driven work satisfaction. The second configuration from the parsimonious solution is complemented by autonomy, it shows satisfaction related to dimensions of workspace permeability (P1). In the last configuration from the parsimonious solution, no complementarians are shown (P2).

In summary, the QCA necessity analysis shows that mutual knowledge creation is necessary but not sufficient for individual work performance. Mutual knowledge creation is included in two patterns of individual work satisfaction. In combination with linkage multiplicity and negated autonomy, or as a complementary condition of SoC with negated participation. With an effect size of zero in the NCA, mutual knowledge creation does not prove to be a necessary condition. The absence of mutual knowledge creation fails the necessity analysis for negated individual work performance by showing a consistency of less than 0.80. The configurational analysis supports the

absence of mutual knowledge creation as sufficient but not necessary for negated individual work performance.

Furthermore, the NCA shows that participation, autonomy, and SoC are necessary for work satisfaction. The configurational analysis further shows that participation aligned with linkage multiplicity and autonomy is sufficient for work satisfaction. The absence of participation is sufficient for negated work satisfaction, but in a pattern with SoC and mutual knowledge creation, negated participation is sufficient for work satisfaction.

The absence of autonomy is a core condition for negated work satisfaction, but a peripheral complementary condition of work satisfaction, when participation and linkage multiplicity are present. Furthermore, in the presence of linkage multiplicity and mutual knowledge creation, the absence of autonomy is a sufficient core condition for work satisfaction. The absence of SoC is not present in configurations for negated work satisfaction, but the presence of SoC is a sufficient core condition for work satisfaction in the absence of participation, complemented by mutual knowledge creation.

Linkage multiplicity was not relevant in the necessity analysis and NCA but is a sufficient core condition in the configurational analysis. The absence of linkage multiplicity is sufficient for negated work satisfaction. The presence of linkage multiplicity is included in two patterns of individual work satisfaction. With participation and complemented by autonomy as well as in the presence of mutual knowledge creation and the absence of autonomy, linkage multiplicity is sufficient for individual work satisfaction.

5. Discussion

The purpose of our study is to analyze institutional patterns in a spatial work setting in the digital and sharing economy (Richter et al., 2015; Bouncken & Reuschl, 2018; Kraus et al., 2019). Our theorizing and open qualitative interviews revealed main patterns in CWS: SoC, autonomy, participation, linkage multiplicity and mutual knowledge creation. The combination of NCA and fsQCA on additional quantitative survey data shows three configurations relating to high work satisfaction levels: a) agility housing (P1), b) knowledge housing (P2), and c) social housing directed patterns in CWS (P3 in Table 7).

Insert Table 7

Our study contributes to institutional theory and to the phenomenon of CWS that permits studying localized institutionalizations. Previous research on institutional logics has focused on conceptually explaining its underlying concepts and formational processes (Lee & Lounsbury, 2015; Lok, 2010). This study is one of the first to empirically investigate the content and configurations. Our results support a macro-organizational view of empowerment which assumes a gestalt (configurational) understanding of factors towards empowerment (Matthews, 2003). Previous research on hierarchical organizations proposes three factors linked to the organizational facilitation of empowerment: 1) dynamic structural framework, 2) control of workplace decisions, and 3) fluidity in information sharing. CWS might specifically contribute to the psychological empowerment to individuals and so push innovation and entrepreneurship further (Spreitzer, 1995). CWS might work as an organizational setting to influence psychological empowerment of individuals. Further, the institutionalizations in CWS allow the organizational facilitation of organizational empowerment.

The agility housing pattern is related to openness to new members, multiplex relationships, fluid structures, where users might step into more work-related permeability in CWS. The openness, fluidity, and porousness point to organizational aspects of work in CWS. It has relationships with a permeability concept that has been used for the porousness of institutional supply chain arrangements between firms (Jacobides et al., 2016). Here it relates to agile and permeable organizational structures between individuals who might be freelancers, start-up entrepreneurs, or employees from the same company. The pattern relates more directly to the tasks and work than to the more general context of localized spaces. In addition, the openness to new members, multiplex relationships and fluid structures especially point to the organizational facilitation of organizational empowerment (Matthews, 2003). The agility housing pattern could thus also be considered as the organizational empowerment pattern in CWS.

The knowledge housing directed configuration relates to the importance of knowledge sharing and communities of practice in previous research (Brown & Duguid, 1991). Direct personal exchanges allow "socialization" (Nonaka, 1994) transferring tacit knowledge and creating mutual knowledge (Bouncken et al., 2016b). Individuals seem to enjoy stepping into processes of exchanging, receiving, and creating knowledge with others in the shared spaces. The knowledge creation processes might be related to specific tasks but also to a general learning experience of the individual. Thus, this configuration relates to the context of work but also to the work itself that might form further advantages for innovation and entrepreneurship.

The social housing directed configuration in CWS corresponds to the SoC as the core of CWS in previous research (Garrett et al., 2017). Users develop SoC by collectively endorsing a vision of community that both unifies the individual to the collective while allowing enough autonomy for members to customize the vision to their particular needs (Garrett et al., 2017). While some members become active participants in the community, others might prefer a more passive style of membership. Yet, the social home improves work satisfaction. The SoC might not be associated with the joint work, projects, or ventures. Instead, it is based on reducing social isolation often present in modern digital media relationships. Thus, the social context influences the context of work(-satisfaction) in the space rather than the actual work.

At last, our research also finds that CWS not always support work satisfaction. Presumably, the high autonomy and the few formalities in a CWS might bring more degrees of freedom of opportunistic behavior and dark personalities (Bouncken et al., 2018). The noise in a space and also frequent and hardly avoidable social interaction might also overburden individuals. In addition, the new open work forms might not always feel good for everyone (Leclercq-Vandelannoitte & Isaac, 2016) and might require a new understanding of work and management (Ivaldi et al., 2018). In addition, the multiple knowledge exchange possibilities might include high risks of unintended knowledge leakage. Thus, the typical openness and exchange in CWS might not necessarily drive individual performance or work satisfaction, even decrease it. Likewise, exchanges within or among fluid teams might lead to an overburden that reduces work satisfaction. While the results indicate that users' individual work satisfaction is always due to patterns of multi-causal characteristics, the lack of work satisfaction is always explained by the lack of single characteristics.

Besides the multi-sources of our empirical study, there are some limitations. First, we do not know what certain practices the CWS use to influence the patterns. For strategic and operational planning of spaces, it would be interesting to understand how they can influence patterns. Second, the patterns and configurations might relate to different personalities or targets of users. Future studies might venture into these questions. We especially encourage studies on identifying personalities of CWS users also including not only the positive personality traits, but also "dark personalities" of Narcissism or Machiavellianism (Bouncken et al., 2018; Kraus et al., 2018a). Further, the effects of CWS on the ventures process gaining of legitimacy (Täuscher et al., 2020) appear to be promising.

Our research thus shows on what patterns CWS providers might focus when they aim to increase work satisfaction. CWS of incumbent firms might aim at more work- and task-related factors, such as on providing a knowledge or a agile housing. CWS with a stronger focus on entrepreneurship might focus on knowledge housing patterns. Independent CWS in urban or rural settings, e.g. by non-profit organizations, might have a focus on the social housing and the connection to a local community.

Future research might further consider a qualitative pattern matching approach to study the phenomenon of coworking. Pattern matching is based on comparing theoretical patterns with observed patterns and especially useful for phenomenon-based research (Sinkovics, 2018). This approach has been successfully used in strategic and global management studies (Bouncken & Barwinski, 2020; Gatignon & Capron, 2020).

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Tables

Table 1: *Sample of initial qualitative interviews*

Interview	*CWS*	*Role*	*Location*	*Gender*	*Age*	*Job*	*Type*
D2	Open CWS1	User	Munich	male	28	Employed	Privat
D3	Open CWS1	User	Munich	male	41	Self-employed	Privat
D1	Open CWS1	Provider	Munich	male	36	CWS manager	Privat
M2	Open CWS3	User	Munich	male	48	Coach	Privat
M3	Open CWS3	User	Munich	male	28	Freelancer	Privat
M1	Open CWS3	Provider	Munich	female	33	CWS Manager	Privat
B1	Open CWS2	Provider	Berlin	male	23	CWS Manager	Privat
B2	Open CWS2	User	Berlin	male	38	Manager	Privat
B3	Open CWS2	User	Berlin	male	29	Manager	Privat
B4	Open CWS2	User	Berlin	female	30	Operations Manager	Privat
C1	Coeporate1	Provider	Bayreuth	male	52	Facility Management	Corporate
C2	Coeporate1	Provider	Bayreuth	female	35	Consultant	Corporate
C3	Coeporate1	User	Bayreuth	male	41	Employed	Corporate
C4	Coeporate1	User	Bayreuth	female	30	Employed	Corporate

Table 2: *Measures of the constructs (N=328)*

	Items	ISC [1)]	CR	MT	HT	HTMT
Participation	New participants can very easily make themselves feel at home here.	0.89				
	New participants can very easily join the knowledge exchange here	0.90	0.88	0.71	0.35	0.49
	There is easy social integration of new participants here.	0.90				
Autonomy	We have strong freedom in choosing goals - rather than authorities set goals.	0.92				
	We have high autonomy in how I/we structure work – rather than authorities.	0.90	0.89	0.73	0.30	0.41
	We autonomously develop or performance metrics – rather than authorities.	0.90				
Linkage multiplicity	Individual often work in several teams at the same time – rather than in a single team.	0.79				
	There are many linkages among teams here.	0.82	0.74	0.49	0.31	0.64
	There loose boundaries between groups/ teams / work-spaces here.	0.82				
Sense of community	Working here (workspace) allows me to become part of a community.	0.84				
	Working here (workspace) allows me to overcome isolation.	0.84	0.77	0.53	0.28	0.52
	Working here (workspace) allows me to build new friendships.	0.82				
Mutual knowledge creation	We mutually develop novel ideas/ insights/ products with others here.	0.87				
	We mutually find novel solutions by sharing knowledge with others here.	0.87	0.79	0.57	0.26	0.46
	We often solve problems by sharing knowledge with others here.	0.78				
Work satisfaction	All my talents and skills are used at work.	0.80				
	In most ways my work is close to my ideal.	0.89	0.80	0.57	0.28	0.50
	The conditions of my work are excellent.	0.83				

[1)] All correlations are statistical significance at the 0.01 level.

Item-to-component correlation (ISC), Cronbach's Alpha (CR), Monotrait (MT), Heterotrait (HT), and Heterotrait-Monotrait-Ratio (HTMT).

Table 3: *Correlations of constructs with workgroup size and usage intensity of CWS (N=328)*

Variable	Mean	Std. Dev.	1	2	3	4	5	6	7	8
1. Workgroup size	8.93	12.97	1							
2. CWS usage intensity	18.62	7.67	0.09	1						
3. Participation	0.00	1.55	-0.01	-0.02	1					
4. Autonomy	0.00	1.57	0.06	-0.03	**0.42**	1				
5. Linkage multiplicity	0.00	1.41	0.11	-0.02	**0.52**	**0.51**	1			
6. Sense of community	0.00	1.44	0.08	0.07	**0.50**	**0.28**	**0.34**	1		
7. Mutual knowledge creation	0.00	1.46	0.02	-0.02	**0.33**	**0.28**	**0.34**	**0.34**	1	
8. Work satisfaction	0.00	1.46	-0.01	0.06	**0.37**	**0.34**	**0.42**	**0.35**	**0.35**	1

Bold values indicate statistical significance at the 0.01 level.

Because the standard deviation of workgroup size is greater than the mean, we using the ln(workgroup size + 1).

Table 4: *QCA necessity analysis for Participation, Autonomy, Linkage multiplicity, Sense of community, and Mutual knowledge creation for the occurrence of Work satisfaction*

	Work satisfaction		~Work satisfaction	
	Consistency	Coverage	Consistency	Coverage
Participation	**0.746**	**0.722**	0.587	0.610
~Participation	0.597	0.574	**0.732**	**0.756**
Autonomy	**0.792**	**0.209**	0.651	0.626
~Autonomy	0.582	0.609	**0.697**	**0.782**
Linkage multiplicity	**0.782**	**0.738**	0.614	0.622
~Linkage multiplicity	0.599	0.591	**0.741**	**0.785**
Sense of community	**0.741**	**0.720**	0.571	0.596
~Sense of community	0.584	0.559	**0.732**	**0.753**
Mutual knowledge creation	**0.801**	**0.684**	0.650	0.596
~Mutual knowledge creation	0.527	0.584	**0.656**	**0.780**

~ = negated membership

Table 5: *NCA for participation, autonomy, linkage multiplicity, sense of community, and mutual knowledge creation for the occurrence of work satisfaction*

	Ceiling zone	Observations (ceiling zone)	Accuracy	p-accuracy	d_{raw}	p	d_{calib}	p
Participation	0.011	2	99.4%	0.004	**0.076**	**0.011**	**0.012**	**0.026**
Autonomy	0.001	0	100.0%	0.007	**0.007**	**0.071**	**0.002**	**0.061**
Linkage multiplicity	0.002	0	100.0%	0.010	0.007	0.165	0.001	0.138
Sense of community	0.012	1	99.7%	0.008	**0.056**	**0.086**	**0.013**	**0.083**
Mutual knowledge creation	0.000	0	100.0%	0.012	0.010	0.744	0.000	0.726

Notes: Effect sizes (d) calculated with raw-data and calibrated data and reported for the straight-line function (CR-FDH). P-values are estimated with 1000 sample reputations.

Table 6: *Parsimonious solution of fsQCA configurational analysis*

	Work satisfaction			~Work satisfaction		
Frequency cutoff = 8; Consistency cutoff = 0.88	Con	Cov	UCov	Con	Cov	UCov
~Participation*Sense of community +	0.80	0.44	0.09			
Participation*Linkage multiplicity +	0.81	0.65	0.25			
~Autonomy*Linkage multiplicity*Mutual knowledge creation	0.84	0.40	0.03			
~Participation				0.76	0.73	0.03
~Autonomy				0.78	0.70	0.03
~Linkage multiplicity				0.79	0.74	0.03
~Mutual knowledge creation				0.78	0.66	0.03
Solution	0.77	0.81		0.68	0.93	

~ = negated membership

Table 7: *Intermediate solution with configurational patterns for membership in workspace satisfaction, respectively non-membership in workspace satisfaction (N=328)*

	Work satisfaction			~Work satisfaction			
Frequency cutoff = 8; Consistency cutoff = 0.88	P1	P2	P3	N1	N2	N3	N4
Participation	●		⊗	⊗			
Autonomy	•	⊗			⊗		
Linkage multiplicity	●	●				⊗	
Sense of community			●				
Mutual knowledge creation		●	•				⊗
Consistency	0.84	0.84	0.85	0.76	0.78	0.89	0.78
Raw coverage	0.60	0.40	0.39	0.73	0.70	0.74	0.66
Unique coverage	0.26	0.05	0.06	0.03	0.03	0.03	0.03
Solution coverage		0.75			0.93		
Solution consistency		0.80			0.68		
Solution PRI		0.61			0.51		

Note: Core causal conditions are present● or absent ⊗ and complementary causal conditions are present • or absent ⊗.